

DOT 460 Quarterly Report – Public Page

Date of Report: October 6, 2013

Contract Number: DTPH56-10-T-000009

Prepared for: DOT

Project Title: “MWM-Array Characterization of Mechanical Damage and Corrosion”

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Public Page Section-

This project is aimed at advancing JENTEK’s MWM-Array technology to provide quantitative characterization of pipeline corrosion and mechanical damage as measured through coatings or insulation. Also of interest are higher resolution images produced with the coatings or insulation removed. For mechanical damage, quantitative characterization includes geometric variations and multidirectional residual stresses (near the surface and deeper within the pipeline). In addition, this program will develop capability to detect cracks at damage sites. For corrosion, enhanced high resolution imaging of both external and internal corrosion will be developed for specific applications to support life management decisions. The JENTEK team will build on demonstrated MWM-Array and MR-MWM-Array detection capabilities to deliver substantially enhanced characterization of damage and a practical means for implementation. This technology has been successfully applied in the aerospace and manufacturing industries and, compared to conventional NDE methods, provides substantially improved performance for imaging curved surface and buried damage through coatings.

During the twelfth quarter of this program, we have: (1) continued the demonstration of an enhanced mechanical damage imaging capability. We have completed one out of three planned demonstrations with cooperation from PRCI. We have continued discussions with PRCI to coordinate the two remaining demonstrations. (2) Continued development of an enhanced low frequency capability for internal corrosion imaging. This includes the development of a smaller sensor configuration that will produce higher resolution internal and external corrosion images compared to current designs. (3) Continued demonstrations of preliminary inspection capability for ferrous and non-ferrous welds. We have continued efforts for development of algorithms for enhanced weld inspection. We are currently working to obtain a sample set for a final demonstration under this program. (4) Continued design and development of enhanced scanners to support laboratory testing and field trials. JENTEK’s next generation MR-MWM-Array scanner, developed under DOT and other customer funding, recently completed a series of performance evaluations and field trials. Initial indications are very positive – the scanner was able to support normal operating schedules, as well as survive field environment. (5) Continued development of a transition plan. We have continued development of a transition plan for our low frequency MR-MWM-Array capability for corrosion detection and characterization for field services by service providers. We are also in discussions with pipeline operators to start field demonstrations of our SCC crack depth tool.

The point of contact for this program is Todd Dunford (Email: todd.dunford@jenteksensors.com; Phone: 781-373-9742).

General Information required on all Public Quarterly Reports

Results and Conclusions:

This section summarizes progress made in this program. This project is aimed at advancing JENTEK's MWM-Array technology to provide quantitative characterization of corrosion and mechanical damage to pipelines.

Progress has been made in a number of areas:

- Enhanced mechanical damage imaging capability – Demonstration preparation – Continued preparing for an enhanced mechanical damage imaging capability demonstration. We have completed one out of three planned demonstrations with cooperation from PRCI. We have continued discussions with PRCI to coordinate the two remaining demonstrations.
- Enhanced low frequency capability for internal corrosion imaging – Performance evaluation and field demonstrations – Continued the development of a smaller sensor configuration that will produce higher resolution internal and external corrosion images compared to current designs.
- Inspection capability for ferrous and non-ferrous welds – Continued efforts for development of algorithms for enhanced weld inspection. We have continued efforts for development of algorithms for enhanced weld inspection. We are currently working to obtain a sample set for a final demonstration under this program
- Enhanced capability scanner development – JENTEK's next generation MR-MWM-Array scanner, developed under DOT and other customer funding, recently completed a series of performance evaluations and field trials. Initial indications are very positive – the scanner was able to support normal operating schedules, as well as survive field environment.
- Development of a transition plan – We have continued development of a transition plan for our low frequency MR-MWM-Array capability for corrosion detection and characterization for field services by service providers. We are also in discussions with pipeline operators to start field demonstrations of our SCC crack depth tool.

Planned Future Activities:

1. Continue preparation for enhanced capability demonstration of mechanical damage imaging.
2. Continue development of enhanced low frequency capability for internal corrosion imaging.
3. Continue development of enhanced SCC and external corrosion imaging through coatings.
4. Demonstrate preliminary inspection capability for ferrous and non-ferrous welds.
5. Continue the design and development of enhanced field deployable scanners and equipment.
6. Continue to evaluate performance of characterization capability
7. Continue development of a transition plan.